

FIG. 1A

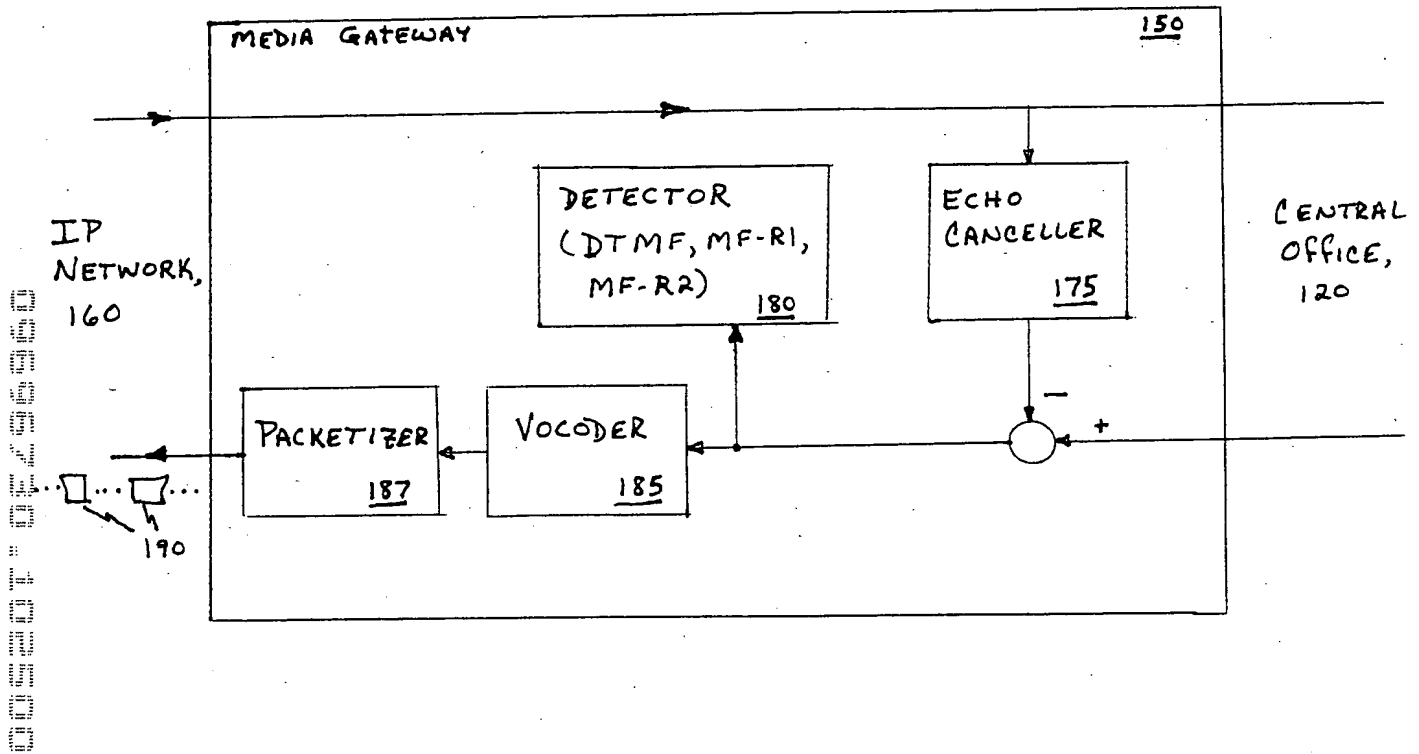


FIG. 1B

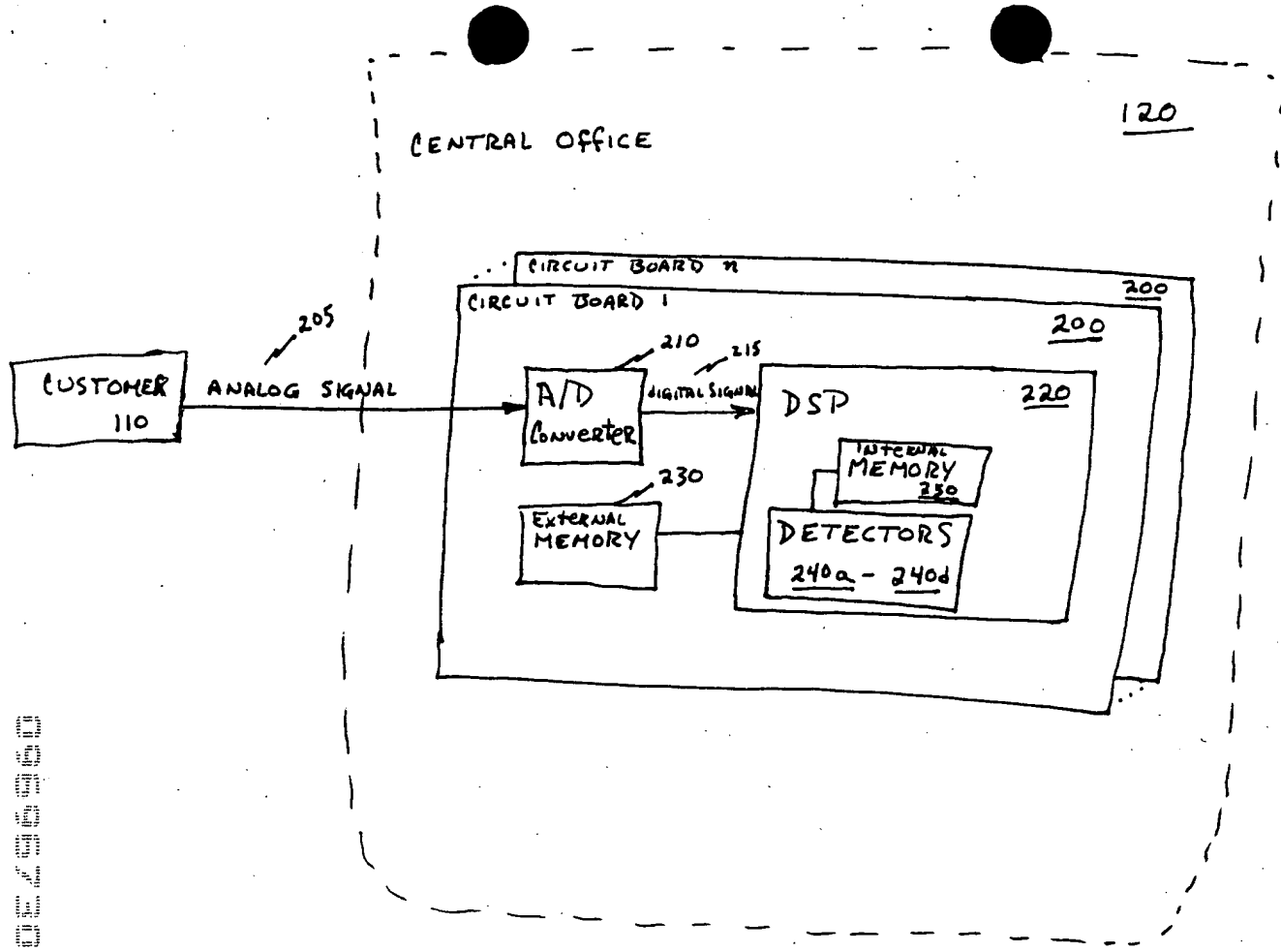


FIG. 2

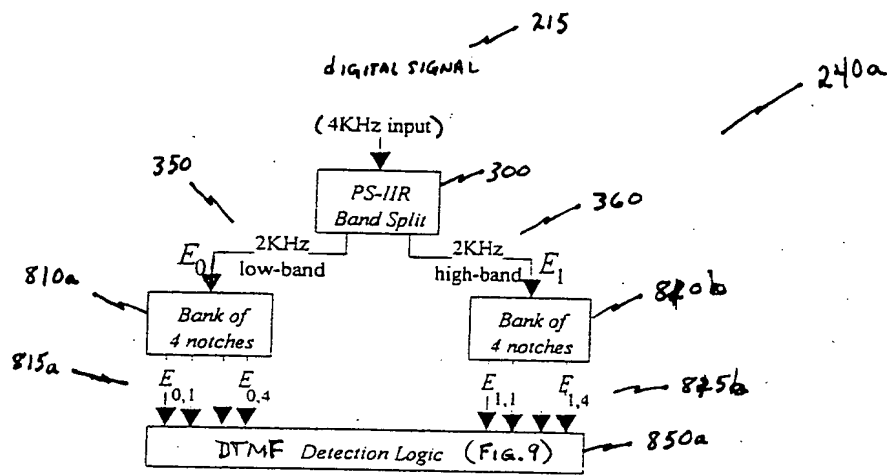


Figure 6. DTMF detector block diagram.

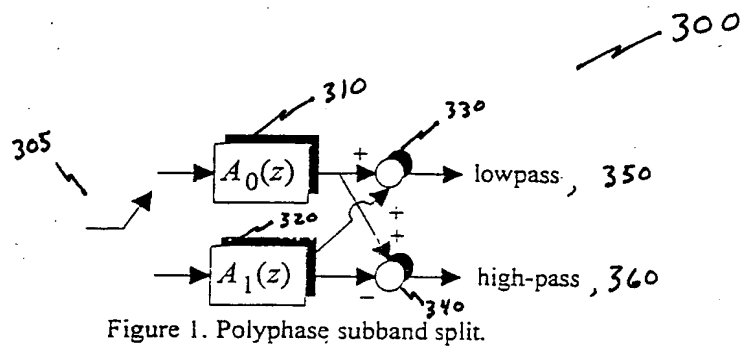


Figure 1. Polyphase subband split.

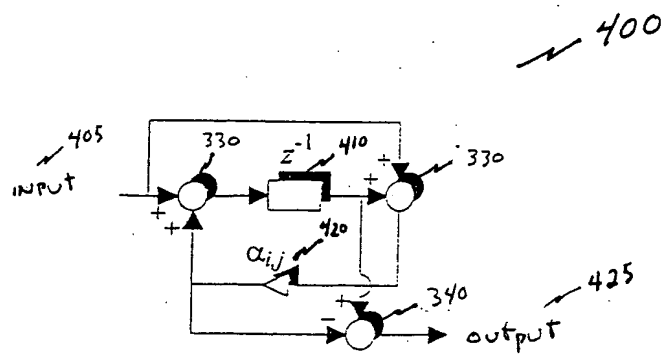


Figure 2. Compact implementation of a first-order all-pass section.

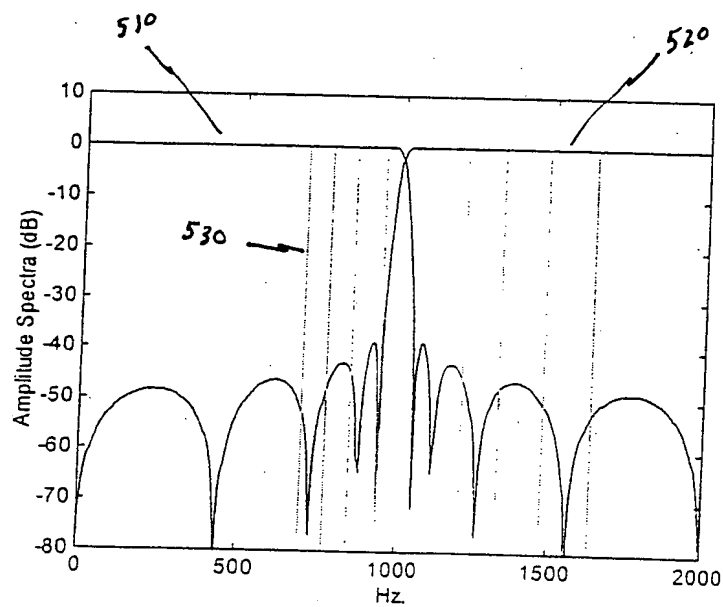


Figure 3. Band-split filters and DTMF.

FIG. 6

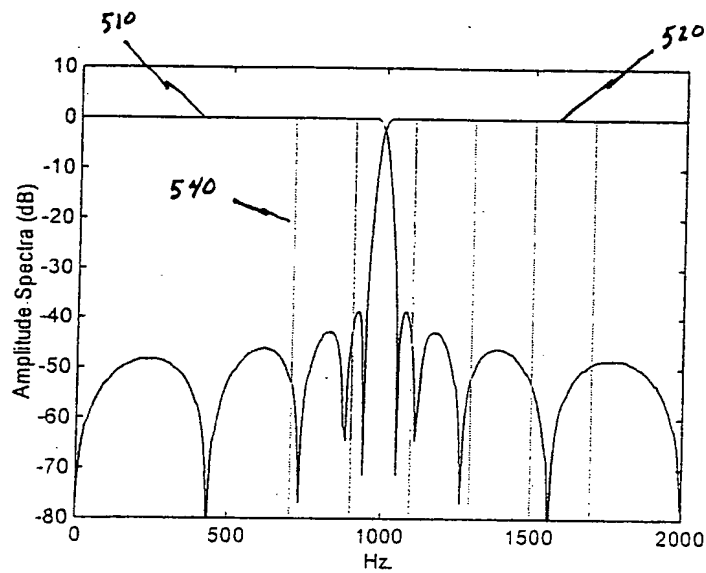


Figure 4. Band-split filters and MF-R1.

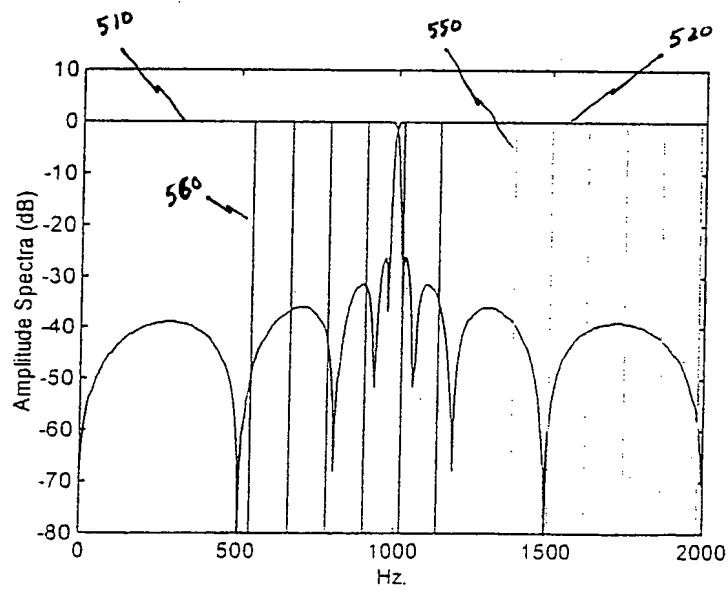


Figure 5. Band-split filters and MF-R2.

FIG. 8

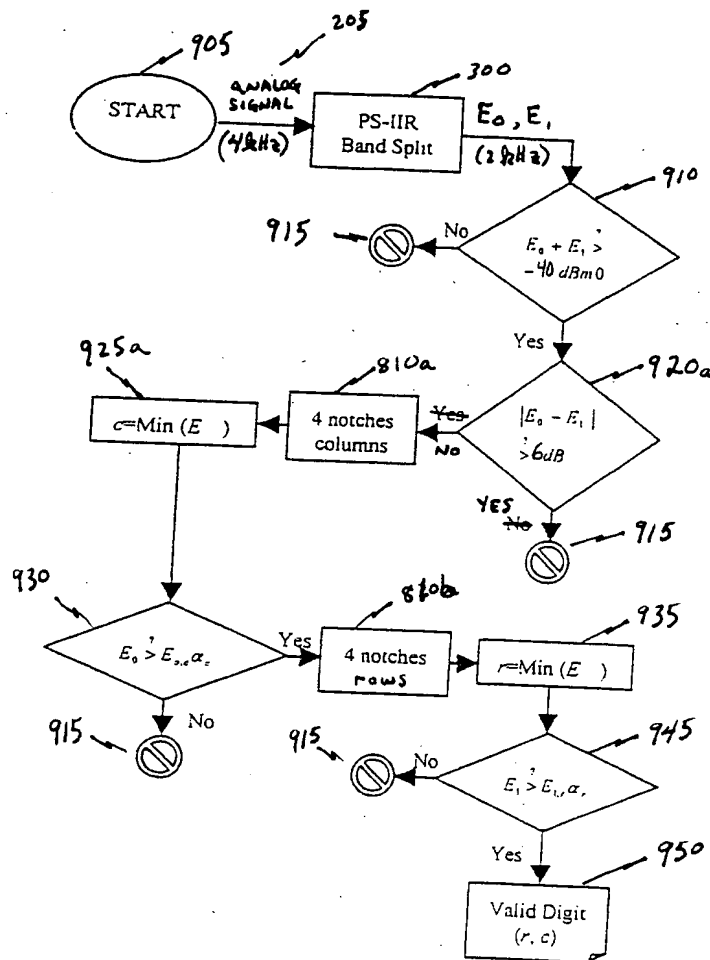


Figure 7..DTMF detection logic.

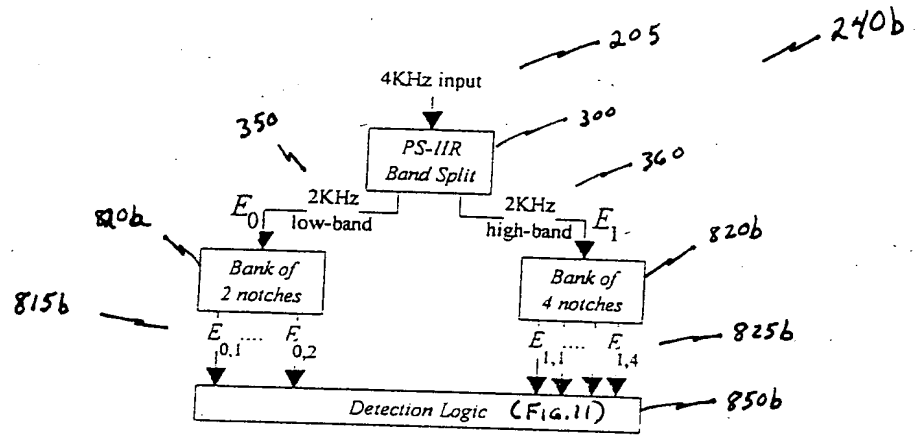
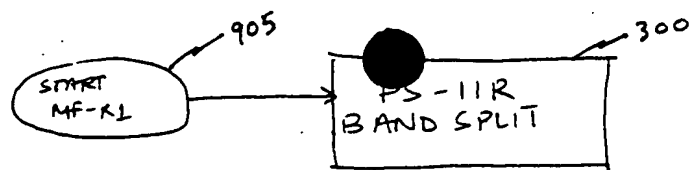
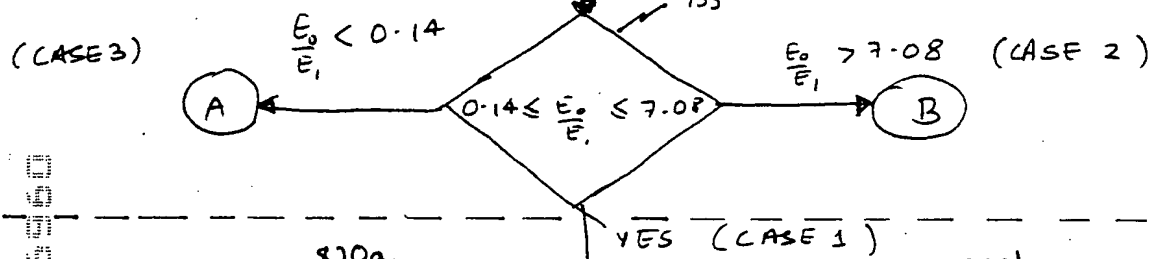
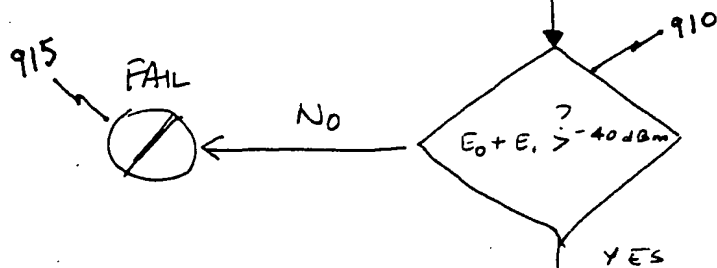


Figure 8. MF-R1 detector block diagram.

Fig. 10



850b



820a

2 NOTCHES
LOWER
SUB-BAND

820b

4 NOTCHES
UPPER
SUB-BAND

(CASE 1)

925b

$$E_{2,e} = \min_e(E_{2,e})$$

925c

$$E_{0,u} = \min_u(E_{0,u})$$

915

NO

$$E_i > \alpha_e E_{2,e}$$

YES

945a

$$E_0 > \alpha_u E_{0,u}$$

YES

NO

FAIL

915

VALID DIGIT
(e, u)

FIG. 11A

850b (cont.)

(B) (CASE 2)

4 NOTCHES
UPPER SUB-BAND

$$E_{0,u} = \min_u (E_{0,u})$$

$$E_{0,u_2} = \min_{u \neq u_1} (E_{0,u})$$

$$\frac{E_{0,u_1} + E_{0,u_2}}{E_0} < 1.25$$

FAIL

NO

915

YES

$$0.1 < \frac{E_{0,u_1}}{E_{0,u_2}} < 10.0$$

$$\left(\frac{E_{0,u_1}}{E_{0,u_2}} \right) < 0.1$$

FAIL

915

$$\left(\frac{E_{0,u_1}}{E_{0,u_2}} \right) > 10.0$$

FAIL

915

YES

FAIL

NO

915

$$E_0 > E_{0,u_2} \times u$$

YES

945b

YES

$$E_0 > E_{0,u_1} \times u$$

NO

FAIL

915

945c

VALID DIGIT
 u_1, u_2

950b

FIG. 11B

850b cont.

(CASE 3)

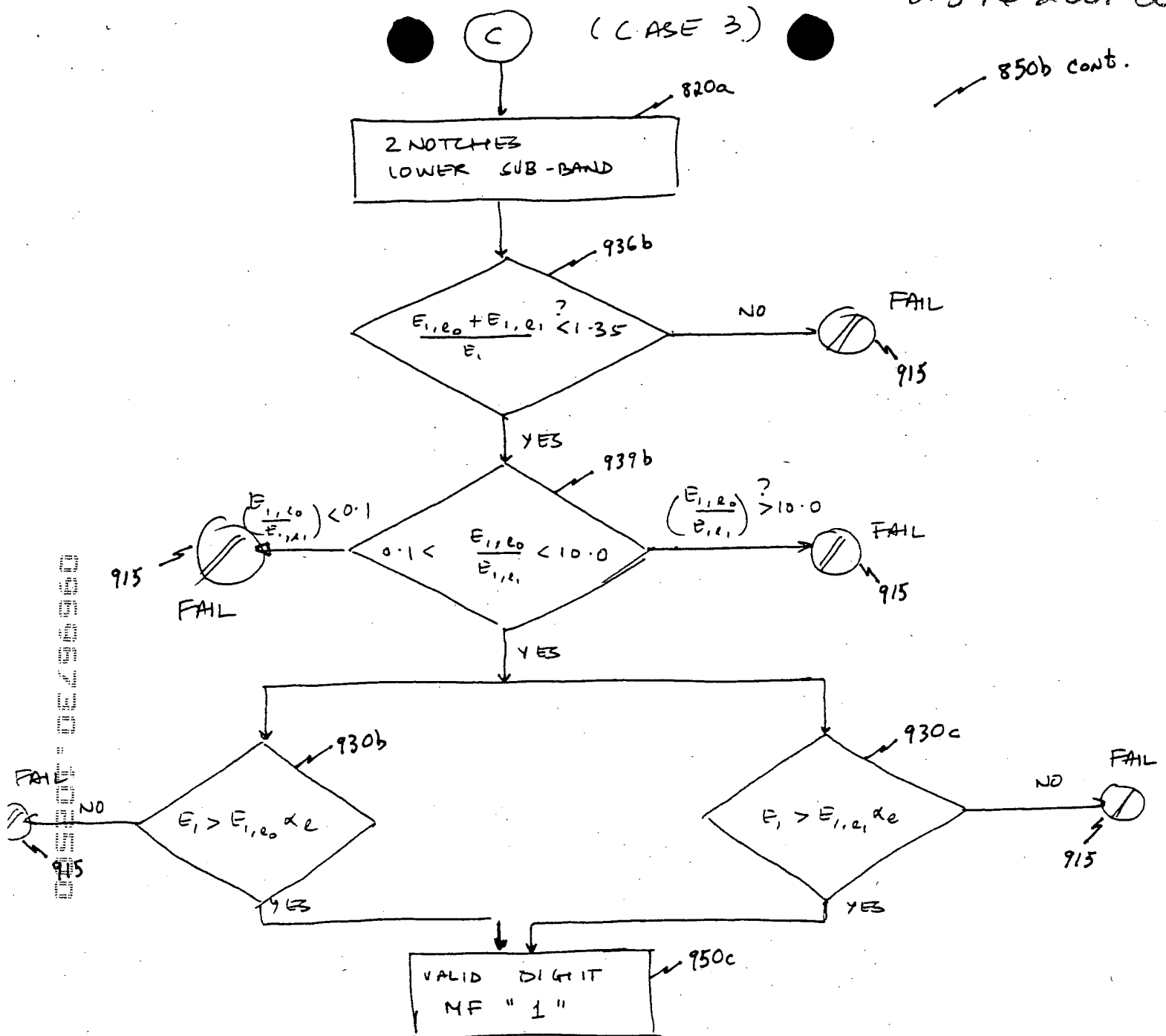


FIG. 11C

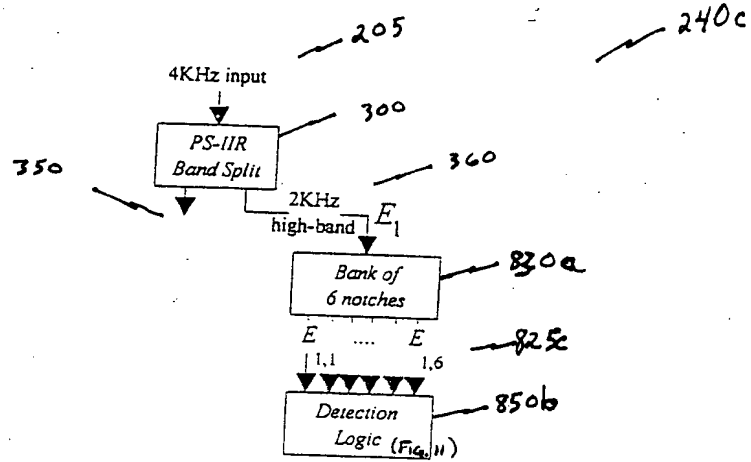


Figure 10. MF-R2 forward detector block diagram.

Fig. 12

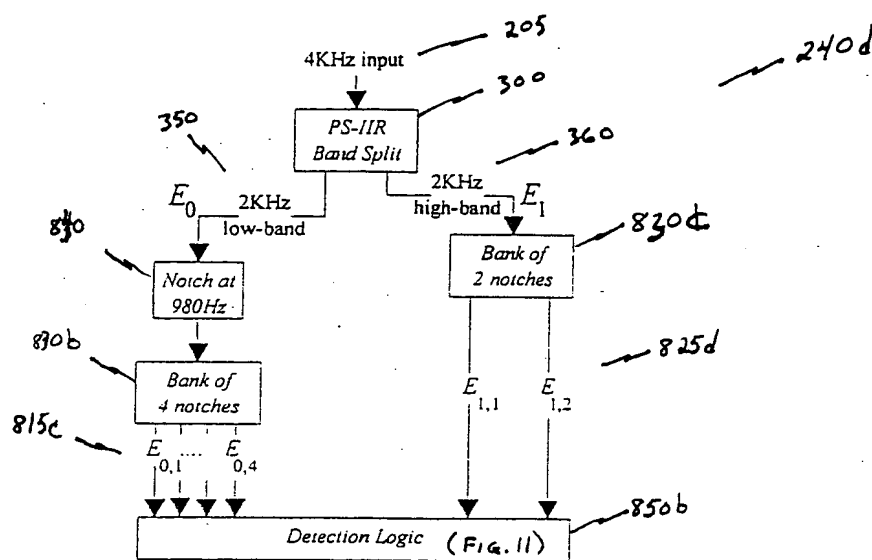


Figure 11. MF-R2 backward detector block diagram.

Fig. 13

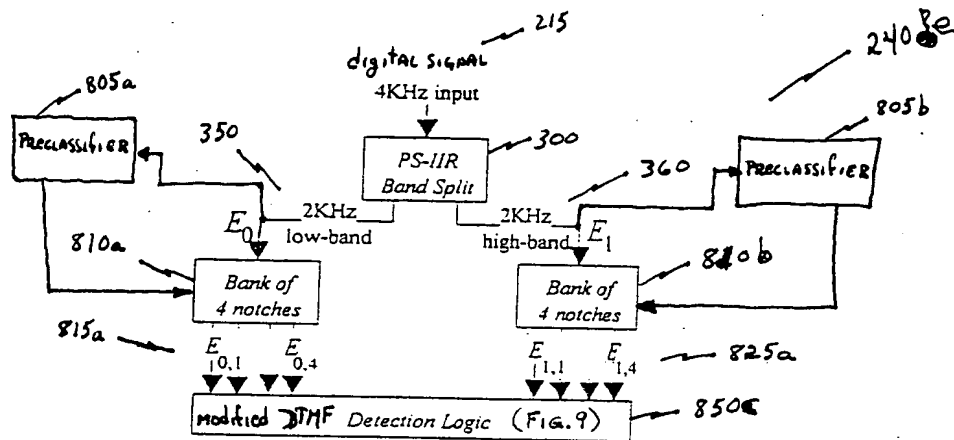


Figure 6. DTMF detector block diagram.

FIG. 14

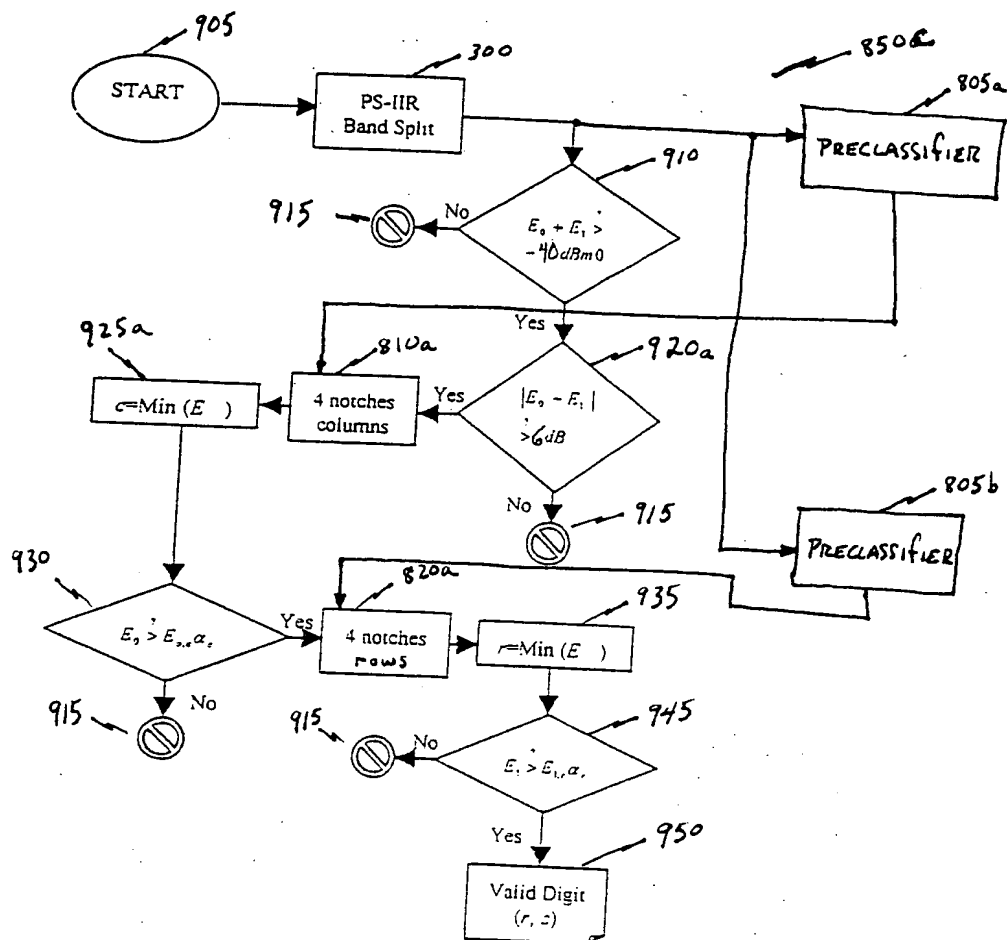


Figure 7. DTMF detection logic.